

# Chapter 1

## Introduction: Making Knowledge Visual

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In the two decades since the origins of computing for arts and humanities the capacity for technology to provide the tools desired by scholars might be thought to have grown sufficiently to provide everything to answer the scholar's prayers. As Will Vaughan comments in his Preface to this volume, the foundation of CHArt<sup>1</sup> – the computers and history of art group – in 1985 and its continuation to date represent a kind of index of development of the field. At around the same time other groups of scholars began to explore the potential of new technologies for history, for languages and linguistics, and the humanities in general. The initial meetings of CHArt were often concerned with the use of computers to analyse visual images, a theme that remains with us, but rather less with the increasing use of ICT for scholarly communication. Looking back at that time – roughly the late 1980s – I recall how this capacity to transfer images and text from distant collections seemed at least as important. This was especially true I suspect for researchers whose object of study was not close by, or who needed access to diverse contextual materials. At the time I was interested in the vast caches of trade literature held by major national collections in the UK and US, and how they might inform the history of design, and perhaps provide a quantitative complement to the mainly formalist accounts then available. Many librarians and information managers, archivists and museum curators shared this interest in making records available in their full richness. Out of this sprang a kind of utopian dream – that freedom of information would lead to a greater equality of access. Michael Ester described the early approach of the Getty Art History Information Program. 'Therefore, about six years ago we began creating a context where we could explore what it is that people in the arts do with images – how they use them in their work, and how we should be shaping technology to address the interests of these professionals.'<sup>2</sup>

If I then look back at how, working in a Midlands polytechnic, I set about getting at this brave new world of information, I see ribbons of file listings on dot matrix printed paper, and instructions to use Anonymous ftp to transfer each image,

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1 CHArt, the Computers and the History of Art Group, was founded in 1985 and publishes annual conference abstracts to 1997 and conference proceedings from 1999, <http://www.chart.ac.uk/>, accessed April 2009.

2 M. Ester, *Image Use in Art – Historical Practice* (1993), <http://arl.cni.org/symp3/ester.html>, accessed April 1999.

painfully slowly, to my desktop PC. No wonder that some colleagues doubted if the slide, or photographic, library would ever be replaced. But access to databases was accompanied by the spread of email from the commercial to the education world, and the convergence of applications in the windows-based interface has unified the previously separate aspects of scholarly practice.

If technical developments have proceeded in a kind of lockstep, with mass-market technological solutions being accompanied by initiatives to create and offer specialized resources, the period has also been punctuated by scholarly reflections on methodology and the ways in which research has itself been shaped by technology. Support for these research communities has often focused on paradigms originally developed within the field of information management, modelled on the process of searching and access, extended in the digital era from verbal to visual resources. Support for scholarly activity which is driven in part by efficiency requirements can sometimes seek to serve a wider community at the expense of depth of support for any one discipline. Sometimes ambitious attempts to circumvent the limitations of text-based searching by retrieving results according to shape, colour or texture ran into a mismatch with what disciplines actually required to advance. As Holt and Hartwick reported of the early development of the QBIC (Query by Image Content) project hosted at University of California, Davis,

Many of the Art Department faculty are exploring aspects of critical theory in their teaching and research. As a result, an additional aspect of the Art Department's involvement in using this software was to see if the attributes computed by QBIC could pick up areas as subtle as race, class and gender in a given database.<sup>3</sup>

In published descriptions of the methods of researchers in the visual arts there may be found paradigms that offer more comprehensive projections of the future state of the visual arts disciplines. Early studies of digital technology and visual disciplines described the special characteristics of, for instance, art history, as 'an art, with a sizable component of craftsmanship'<sup>4</sup> and seemed generally to applaud the impact of technology without fully examining the implications for the future direction of the discipline. While emphasizing the degree of judgement in doing visual research the effect of access to large-scale image libraries or comprehensive metadata was assumed mainly to have a helpful influence on the work rate. But had the work itself changed? A full decade later the inadequacy of terms used to describe approaches to art historical research was still being lamented by scholars.

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3 B. Holt and L. Hartwick, "'Quick, Who Painted Fish?': Searching a Picture Database with the QBIC project at UC Davis', *Information Services and Use*, 14 (1994): 79–90.

4 E. Bakewell, W.O. Beeman and C.M. Reese, *Object Image Inquiry: The Art Historian at Work*; Report on a Collaborative Study by the Getty Art History Information Program (AHIP) and the Institute for Research in Information and Scholarship (IRIS), Brown University (Santa Monica, CA.: AHIP, 1988), p. 72.

As Marilyn Lavin, an early champion of imaging technology to reconstruct works of art, put it:

What I am looking for is an expression for a mass of material that is intellectually focused on a particular issue, that is constructed and used privately by a scholar in considering a specific problem, and that becomes a permanent retrievable record of a sequence of personal ideas and sources.<sup>5</sup>

Qualitative evidence, drawn from studies of researchers' own accounts of their methods and intentions can be set beside the intentions of research councils and others who have set out to enhance the support for research. Is it still true that digital technology remains limited to providing 'greater availability and access to visual material', and the 'manipulation (and) enhancement of digital images'?<sup>6</sup>

Evidence of a deeper transformation, akin to Lavin's 'conceptual reorientation' reveals that researchers have understood this potential, exploited these techniques, and developed resources, the very existence of which would have seemed unlikely in the pre-digital era, but which can be seen to affect the creation and legitimization of knowledge in the visual field.

### **The shape of innovation**

A number of the chapters in this volume have their origins in presentations and subsequent discussion at an Expert Seminar hosted by Mike Pringle, then Director of AHDS Visual Arts, held on 27 April 2006 at Chelsea School of Art, London, and entitled 'From Pigments to Pixels'. As Lorna Hughes noted in her introduction to the one-day event, the purpose of the series was 'to describe and examine the impact of ICT on research in the field'. This seminar revealed that the impact goes way beyond the introduction of some new tools and methods. Rather, these technologies are radically changing the production of visual culture, its presentation and representation, and its analysis and evaluation. For instance, one of the papers not presented in the current volume, by Tom Morgan, made the point that,

The discipline image providers have in mind is no longer art history, in which a demand is fulfilled through the supply of an image, but the attachment of multiple meanings to an image by its users, and then sharing these with others. The millions of hits on major museum web sites are being used in ways that echo the strategy of Wikipedia, a structured multi-author work now often considered as reliable as conventional encyclopedias, or the less structured 'cloud tagging'

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5 M.A. Lavin, 'Making Computers Work for the History of Art', *Art Bulletin*, 79/2 (1997): 198.

6 M.E. Graham and C. Bailey, 'Digital Images and Art Historians', *Art Libraries Journal*, 31/3 (2006): 23.

found on web sites like Flickr. The act of ‘tagging’ is a form of active listening, which creates meaning for emerging communities of image users.<sup>7</sup>

The discussion which concluded this session questioned whether there is consensus on which approaches would meet the needs of the majority of visual arts researchers, how reliable Wiki-based and folksonomic development of resources would prove to be, and how sustainable very large and very complex databases would be in the light of the economic considerations brought to bear by research councils. The visual arts, in common with much of the humanities, tend to mix up their research approaches depending on context. Some visual artists will almost perversely use outdated software or hardware if they find them effective or interesting, and this makes it much harder to determine when the ‘tipping point’ might come when most, if not all, researchers in the visual arts might regard some resources and tools as standard.

Just two years later, a final Expert Seminar was convened both to summarize the series and the achievements of the Methods Network as it faced closure after three years, and to confront just this issue: how does an arts and humanities ‘e-infrastructure’ set about demonstrating its worth? The group that met on 1 April 2008 at the Wellcome Institute, London, took careful account of the inevitable inefficiency of dismantling one structure to create another, but it also recognized how much the policy landscape around pedagogy and research had changed since the early days of arts and humanities computing. As David de Roure, Head of Grid and Pervasive Computing, University of Southampton, commented,

Generally speaking, Web 2.0 is about ease of participation. One of the key lessons is that you can build software very easily and quickly which has an impact upon the e-infrastructure in a short period of time since people can access it easily and begin using it as soon as it is available ... and this allows new ways of thinking and new questions.<sup>8</sup>

Bruce Brown, Pro-Vice-Chancellor, Research, University of Brighton and RAE Main Panel Chair 2008, also urged that arts and humanities researchers look forward to the convergence of the needs of institutions and users in a context that was now more appropriately seen as an aspect of the creative industries rather than an isolated academic pursuit. He characterized the distance travelled by referring to a recent paper to the JISC Board in which:

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7 C. Bailey, ‘Rapporteur’s Report’, AHRC ICT Methods Network Expert Seminar on Visual Arts: From Pigments to Pixels (2006), <http://www.methodsnetwork.ac.uk/redist/pdf/es5rapreport.pdf>, accessed April 2009: 1.

8 AHDS, ‘Note of Expert Seminar: Strategic Approaches to Developing the e-infrastructure for Arts and Humanities Research, 1 April 2008, Wellcome Institute, London’, unpublished (2008), p. 20.

Ian Dolphin and Paul Walker have observed that whereas early stages of the DNER and Information Environment were characterized by sequential verbs such as: create, publish, manage, curate, locate, request, access and use, current changes in the broader e-environment now demand reconsideration of this model ... and need to be extended to include 'shared infrastructure services' that are widened beyond the perceived ownership of what is 'often regarded as a "library" preserve'.<sup>9</sup>

We might also note the cautiously positive endorsement of the increased confidence with which visual arts researchers are employing digital technologies from the Research Assessment Exercise panel Overview Report. They noted about the submissions for the 2008 round that:

The sub-panels' ... scrutiny demonstrated that the scholarly infrastructures supporting non-traditional forms of research had both advanced since RAE2001 and were maturing – the majority of submitted outputs included sound evidence of the scholarly apparatus underpinning the research. ... There is clear evidence that: a greater understanding of methodology is emerging; that evolving networks of resources and references are building the intellectual infrastructure for such research; and, that new ways of harnessing digital resources to conserve, access and disseminate non-traditional scholarly materials are advancing.<sup>10</sup>

## **Themes**

### *Finding*

The chapters in this volume are grouped into three sections, though the concerns of the authors cross these artificial boundaries to deal with related subject matter and technical approaches. A consistent theme of the debate has been the core of 're-research' – the use of technology to improve the search for information. Mike Pringle uses the findings of a research project hosted by AHDS Visual Arts that aimed to discover whether the analytical techniques common in science-based disciplines might have uses in the interpretive and creative arts and humanities. While he sees the potential for quite radical transfer across disciplines, Kirk Martinez and Leif Isaksen argue that using 'domain level ontologies' will provide the best assistance for researchers who want to take advantage of powerful new techniques such as semantic web searches. Stuart Jeffrey sets out to show that successful searching can only become less likely as relevant material on the internet becomes more heterogeneous. Taking archaeology as his example, he argues that interventions

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<sup>9</sup> Ibid., p. 11.

<sup>10</sup> HEFCE, Zipped pdf file, Unit 63 Art and Design, RAE 2008 Subject Overview Report (2009), <http://www.rae.ac.uk/pubs/2009/ov/>, accessed May 2009: 2.

are needed now to ensure that discovery and description issues, especially for complex time-based media, are given the same status now accorded to archiving standards and preservation. In the final chapter in this section Daniela Sirbu is also concerned with how we advance our understanding through improved modelling of data, although in this case the technique is virtual reality applied to historic monuments. As she argues, the three main features of this technique – immersion, interactivity and imaginative inference – work to help us solve complex problems in many fields, sometimes by going beyond what can be directly sensed.

### *Making*

Complementing these practical explorations of resource discovery, the next three chapters are about the shift in professional relationships, and at a deeper level, in the disciplines themselves, caused by engagement through digital forms of the archive.

Doireann Wallace describes how commercial keywording practice may be serving to match images more closely to uses, but that the construction of those uses is itself constrained by the habits and disciplines applied to them. In Sue Breakell's view, the aim of collections to achieve 'full disclosure' is in practice giving way to more complex collaborations as the disclosed content becomes the shared property of archivist and user. Closing this section, James MacDevitt argues more radically that we should abolish the distinction altogether as the user/archivist both creates and uses the Networked Digital Archive.

### *Understanding*

Always running alongside the creative use of technology has been the interpretation of these forms either within the creative tradition or, sometimes, as antithetical to it, or as a marginal cultural practice. Making historical sense of these transitions in creative practice, and observing absences and discontinuities, Charlotte Frost argues that net art constitutes a category that is currently suppressed in art history. Taking a wider view, Jemima Rellie seeks to map significant innovations in the communication of knowledge and describes how the disruptions to existing channels of communication are part of larger social changes, to the extent that the merging of roles: visitor, curator, scholar, may threaten the distinctiveness of the museum, but seem unlikely to lead to its demise. Decentring of the previously privileged gaze of the specialist is also the subject of the concluding chapter. From the standpoint of cultural theory, Charlie Gere points out that not only is the internet literally decentred, the ramifications of its application can be viewed more optimistically than earlier theorists of the visual supposed, providing scope for making, as well as understanding the realm of visual knowledge. A common feature of many of the chapters in this volume is that intellectual enquiry is situated in specific social practice, and can only be properly understood through reference to the context of policy and social structure. And, of course, so it is with the 'infrastructure' of research, the means by which it is supported and shaped.

## **Shaping the debate**

A complete account of the history of e-infrastructure projects and services in the UK has yet to be written, but it is a virtually universal tenet that the receipt of public funds must be justified by evidence of impact on the ‘community’, usually conceived as academic staff, teachers and researchers and the information managers with whom they interact. Given this emphasis it is not surprising that these support projects have generally been expressed as partnerships between individual institutions, either at the level of delivery, in which institutions take responsibility for an aspect of the service, or through a governing group with representatives from a number of institutions. As a result of this burgeoning of projects, all aimed at involving an increasing proportion of academic staff in discussion about the application of technology, there has been, for most of the last two decades, a succession of launch events, subject workshops, training events and conferences, with attendant publications and reports.

In general projects are evaluated, often through a process of independent review, but incorporating reflection by the project’s staff, its governing body and usually its target community. Some assurance about the effectiveness of resource expenditure is sought, and almost invariably found, in this form of project-by-project evaluation. At the larger scale, however, indicators of the impact of this approach to instigating change in academic practice are harder to identify. To do this the impact of projects would need to be set alongside the whole range of activities that make up academic life, from institutional staff development aimed at supporting changing practice in scholarship or pedagogy, and perhaps most significantly, the role of wider scholarly communications, especially societies, their newsletters, journal and conferences.

In contrast to the needs-based model of funded projects the organs of scholarly communication are driven by the wishes and desires of their participants. This distinction is not surprising. The public sector in general operates on a model in which quantifiable targets can be defined and it is supposedly evident when these are achieved. Scholarly societies on the other hand define their objects in the vaguest terms in order to avoid redundancy at some later point. They rely on voluntary effort, though that is tacitly underwritten for the most part by higher education funding.

There is considerable interaction between projects and societies. In smaller subjects many individuals perform roles in both. This symbiosis may mean that societies’ publications and events provide a forum for publication, discussion and development by projects. However, as a rule societies outlive all projects that do not succeed in making themselves indispensable to institutions or become institutions in their own right. To take only one example, a cursory survey of the extensive online archive of CHART reveals its extensive co-dependence with several generations of ICT projects, such as ADAM, VADS and AHDS Visual Arts (see the CHART website).

## **Evidence of value**

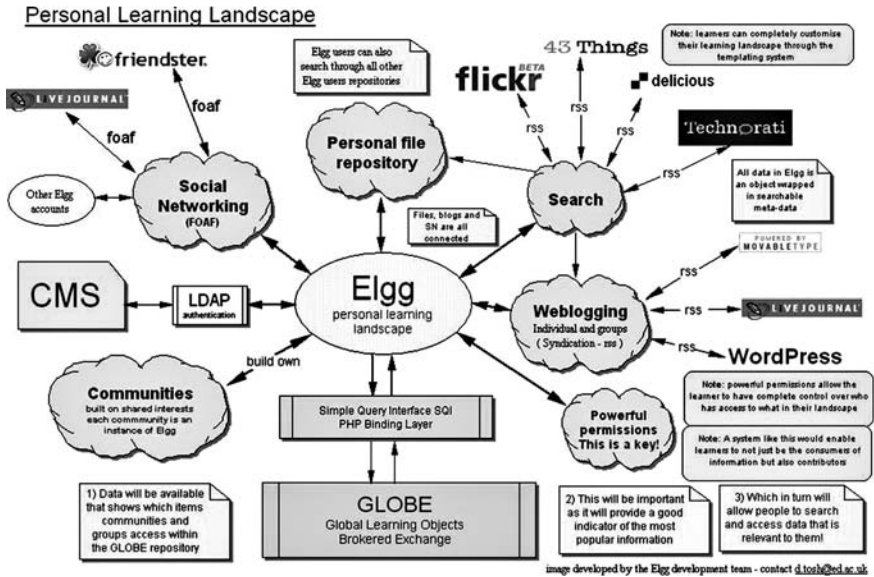
The decision in 2008 to ‘disinvest’ in the Arts and Humanities Data Service, in many ways a final evolutionary stage of the various scholarly support services developed since the 1980s, brought into sharp focus the discussion about what the considerable financial investment in digital technology infrastructure has actually secured and posed the question ‘has it been worth it?’ But how can we know what the impact of these new technologies has really been on the communities of research practice in the visual arts? The use of measurement to assess research quality is hotly debated, no more so than currently, when the transition from the Research Assessment Exercise, the last round of which was in 2008, takes effect and all subjects, including the arts and humanities, must by 2013 expect the new methodologies of the Research Excellence Framework to begin to shape the public funding for research activity in higher education. With it comes a new reliance – for the humanities – on citations and other bibliometric analyses as a measure of research quality.

One approach to understanding the impact of new technology, borrowing this quantitative approach, might be to look at the use of the Technical Appendix, a device whereby researchers describe the technical underpinning of their methodology and indicate whether the data generated might be available in digital form for other research purposes. A Technical Appendix, while not mandatory, was advised for any project involving the handling of large amounts of data. Figures extracted from data published by the Arts and Humanities Data Service, and kindly provided for this essay by David Robey, show some clear trends.

Of the research project proposals supported by the Research Grants programme of the Arts and Humanities Research Council between 1999 and 2006, there is a clear hierarchy of subjects, with some apparently predisposed to including a technical appendix, like modern languages and linguistics (35 per cent), while philosophy, religious studies and law are least likely to include this element (12 per cent). While 23 per cent of proposals in medieval and modern history included a Technical Appendix, only 17 per cent of those submitted to the Visual Arts and Media: practice, history, theory panel did so. When it comes to the AHRC’s Resource Enhancement scheme the picture looks different. Proposals to all panels show a much higher proportion with a Technical Appendix. But how should we account for the figure for visual arts and media of 100 per cent? Perhaps this has to do with the strength of interest in shared image databases that has figured in the journal literature, supporting the identification of a ‘visual turn’ in cultural studies as a whole, and the networking of the many digital library projects affiliated to the Visual Arts Data Service.

While differences between disciplines seem to emerge clearly from the data, supporting the thesis that research in the visual arts tends to be more individualistic and less collaborative than that in other subjects, it is much harder to spot meaningful trends over time. The sample sizes are small at this level, and emerging or increasing enthusiasm for digital technology as a support for research in visual arts cannot be confirmed or disproved by these data.

A scholarly community first shapes its research, but it is in turn shaped by it. The continuum of learning has higher levels of research at one end and at the other the practice of research methods in teaching seems to be taking on quite a new form – one mapped by Lorcan Dempsey as a ‘new learning landscape’ (see Figure 1.1). In this environment resources are tailored to individual need, communication between scholars takes place in many general as well as specialized forums, and there is greater participation in common tasks by scholars at all levels in the discipline.



**Figure 1.1 Personal Learning Landscape**

Source: Image developed by D. Tosh and B. Wurdmuller, for Elgg, the open source social networking service, <http://elgg.org/index.php>.

Dempsey, blogging in 2005, noted that the University of Rochester was asking itself how its services should change to accommodate working methods that more or less intuitively adopt new technologies:

In the long run, we envision a system that, first and foremost, supports our faculty members' efforts to 'do their own work' – that is, to organize their resources, do their writing, work with co-authors, and so on. Such a system will include the self-publishing and self-archiving features that the DSpace code already supports, and will rely heavily on preservation, metadata, persistent URLs, and other existing features of DSpace. When we build this system, we will include a

simple mechanism for converting works in progress into self-published or self-archived works, that is, moving documents from an in-progress folder into the IR. We believe that if we support the research process as a whole, and if faculty members find that the product meets their needs and fits their way of work, they will use it, and ‘naturally’ put more of their work into the IR.<sup>11</sup>

The teaching and research worlds were never more of a continuum than they are now. In many areas of the visual arts – those concerned with making – the discussion of the validation and methodological development of practice-based research has always insisted on the place in the curriculum for exploration of new forms and techniques. In all fields the ‘virtual research environment’ and the ‘virtual learning environment’ have come to share many characteristics. The creation of digital repositories by universities that at once capture research content and its metadata, and provide a location for ‘learning objects’ tend to locate research as a kind of super-independent learning, linked in form and content to many of the tasks set for the undergraduate student.

The intellectual structures of research and its technological forms may be converging just as funding decisions and economic pressures act to frustrate their union. Yet it seems probable that the voluntaristic impulse that has sustained communication for so long will ensure that the futures outlined in this volume come to resemble actuality. If this optimism is warranted it must yet be grounded in a feeling for what research is about, even if its definition has, in Arjun Appadurai’s phrase, the ‘invisibility of the obvious’<sup>12</sup> and we need the advantage of hindsight to deploy Panofsky’s cooler definition of research in the humanistic disciplines as ‘a coherent system that makes sense’.<sup>13</sup>

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11 N.F. Foster and S. Gibbons, ‘Understanding Faculty to Improve Content Recruitment for Institutional Repositories’, *D-Lib Magazine*, 11/1 (2005), <http://www.dlib.org/dlib/january05/foster/01foster.html>, accessed June 2009, quoted in Dempsey (2005).

12 A. Appadurai, *Globalization* (Durham, NC: Duke University Press, 2001), p. 10.

13 E. Panofsky, ‘The History of Art as a Humanistic Discipline’, in *Meaning in the Visual Arts: Papers in and on Art History* (Garden City, NY: Doubleday Anchor Books, 1955), p. 7.